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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/626,981	07/27/2000	Douglas Melton Carper	13DV13683	2688

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EXAMINER

FERGUSON, LAWRENCE D

ART UNIT	PAPER NUMBER
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1774

DATE MAILED: 04/18/2003

12

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

09/626,981

Applicant(s)

CARPER, DOUGLAS MELTON

Examiner

Lawrence D Ferguson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 February 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 and 35-38 is/are pending in the application.
- 4a) Of the above claim(s) 19-34 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 and 35-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This action is in response to the amendment mailed February 06, 2003. Claims 1, 13, 35, 36, 37 and 38 were amended rendering claims 1-18 and 35-38 pending with claims 19-34 withdrawn from consideration.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2, 4, 6, 8-10, 13-14, 16, 18, and 35-38 are rejected under 35 U.S.C. 102(b) as being anticipated by Parthasarathy et al., U.S. Pat. No. 6,251,815 B1.

Parthasarathy shows a thermal gradient resistant ceramic composite (member) used in exhaust components in jet and rocket engines comprising a ceramic alumina and silica matrix (column 1, lines 36-41 and column 2, lines 64-67 and claim 4) and mats or stacks (patterned fibers in fabrics, weaves) of fibers comprising Nextel 610 and Nextel 720 (alumina and alumina-silicate fibers) (column 1, lines 37-40 and column 2, lines 60-63). Parthasarathy further shows that different fiber types which have different coefficients of thermal expansion are used in selected regions of the composite structure such that the stresses resulting from differences in

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their thermal expansivity are opposite the stresses imposed by differences in temperature during use (column 4, lines 16-45). Parthasarathy additionally shows that the fibers in a hot region 222 (first region with first combination of fibers) should have a lower coefficient of thermal expansion than fibers in the cool region 224 (second region with second combination of fibers) (column 4, lines 45-51 and Figures 3-4) and thus, are different from each other. Parthasarathy shows that the hot and cool regions (discrete regions) comprise fibers and matrix materials in the regions (stacks) and thus, the fiber stacks extend from surface to surface (completely through the first and second regions) (column 2, lines 7-20).

Claim Rejections - 35 USC §103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 3, 5, 7, 11-12, 15, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Parthasarathy et al., U.S. Pat. No. 6,251,815 B1.

Parthasarathy is relied upon as above for claims 1 and 13. Although Parthasarathy does not specifically show that the ceramic composite has the relationship as in instant claims 3 and 15, the invention of Parthasarathy has the same components of the matrix and reinforcing fibers as in the instant invention. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make such a

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composite with the same relationship and it would have been obvious that the invention of Parthasarathy would have the relationship of instant claims 3 and 15 because it is known in the art to use specific fibers in an alumina matrix which would be expected to result in the relationship.

Though Parthasarathy shows first and second fibers are in a ratio of 90:10 (column 5, lines 12-26), Parthasarathy does not show that the fibers included in the ceramic composite are in the range of about 20-70 volume % as in instant claims 7, 11, and 12. Parthasarathy does not show the ranges of the first and second temperature ranges as in instant claims 5 and 17. However, such ranges are properties which can be easily determined by one of ordinary skill in the art. With regard to the limitation of the range of volume percentage and temperature, absent a showing of unexpected results, it is obvious to modify the conditions of a composition because they are merely the result of routine experimentation. The experimental modification of prior art in order to optimize operation conditions (e.g. ranges) fails to render claims patentable in the absence of unexpected results. All of the aforementioned limitations are optimizable as they control the level of fiber reinforcement, stress, and strength of the composite. As such, they are optimizable. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the composite with the limitations of the volume percentage of fibers and ranges of temperatures of the first and second regions since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Parthasarathy shows that those skilled in the art would recognize that the hot and cool sides (regions) are relative terms which indicate a temperature differential between the two sides

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(column 3, lines 31-45) and that the ceramic composite of Parthasarathy is used in combustion and exhaust components in jet and rocket engines; however, Parthasarathy does not show that the sides "experience" the range of first and second temperatures as in instant claims 5 and 17. It would have been obvious to one having ordinary skill in the art at the time the invention was made that the hot and cool sides (regions) of the ceramic composite of Parthasarathy could "experience" the temperatures as in instant claims 5 and 17 because the hot and cool sides are the same components of the instant invention. Additionally, Parthasarathy uses the same fibers Nextel (610 and 720) that Applicant uses so discovering these same temperature ranges would be within the skill of the ordinary artisan.

Further, the limitations as shown in claims 1 and 13 (of which claims 5 and 17 depend upon, respectively) of "the article...subjected ...to a plurality of operating temperatures and stresses" introduces process limitations to the product claims. The patentability of a product does not depend on its method of production. Such process limitations are given little patentable weight in the product claims.

Response to Arguments

6. Rejections of claims 1, 13 and 35-38 made under 35 USC 112, second paragraph are withdrawn to Amendments made to the claims and Applicants' remarks.

Applicants' arguments filed February 06, 2003, in regards to rejection made under 35 USC 102(b) as being anticipated by Parthasarathy et al., U.S. Pat. No. 6,251,815, have been fully considered but they are not persuasive. Applicant argues the structure defined by the present

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invention is completely different from and the opposite of the structure defined by the reference. Examiner respectfully disagrees because Parthasarathy shows that different fiber types which have different coefficients of thermal expansion are used in selected regions of the composite structure such that the stresses resulting from differences in their thermal expansivity are opposite the stresses imposed by differences in temperature during use (column 4, lines 16-45). Parthasarathy additionally shows that the fibers in a hot region 222 (first region with first combination of fibers) should have a lower coefficient of thermal expansion than fibers in the cool region 224 (second region with second combination of fibers) (column 4, lines 45-51 and Figures 3-4) and thus, are different from each other. Parthasarathy shows that the hot and cool regions (discrete regions) comprise fibers and matrix materials in the regions (stacks) and thus, the fiber stacks extend from surface to surface (completely through the first and second regions) (column 2, lines 7-20). Applicant argues no layer or region extends transversely into the article more than 90% of the transverse distance from face to face and the structural disposition of the layers of the reference is selected to resist thermal differences from face to face. A layer or region extending transversely into the article more than 90% of the transverse distance from face to face is analogous to discrete regions extending substantially completely through the matrix of the article. Furthermore, Parthasarathy shows that different fiber types which have different coefficients of thermal expansion are used in selected regions of the composite structure such that the stresses resulting from differences in their thermal expansivity are opposite the stresses imposed by differences in temperature during use (column 4, lines 16-45). Applicant further argues the structure defined by the present invention is the opposite of the structure of the

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reference because Applicant claims the regions of the present invention extend, each generally as a column, transversely functionally completely through the article, from face to face. Examiner respectfully disagrees because Applicant claims 'the article comprises a plurality of discrete regions each extending substantially completely through the matrix of the article,' which means the discrete regions do not necessarily extend completely through the matrix of the article.

Applicant argues the description of the present invention clearly is related to regions of different operating temperatures extending functionally completely transversely through the article. This is not true because Applicant claims 'the article comprises a plurality of discrete regions each extending substantially completely through the matrix of the article,' which means the discrete regions do not necessarily extend completely through the matrix of the article. Applicant argues the prior art structure, without extending completely transversely through the matrix cannot be capable of performing the same kind of thermal stress resistance in different regions across a face of an article, as is provided by the structure of the present invention. This is not true because, as claimed, Applicant's structure substantially extends through the matrix, but does not necessarily completely extend through the matrix; therefore, the prior art is capable of performing the same kind of thermal stress resistance in different regions across a face of the article, absent any evidence to the contrary.

Applicants' arguments filed February 06, 2003, in regards to rejection made under 35 USC 103(a) as being unpatentable over Parthasarathy et al., U.S. Pat. No. 6,251,815, have been fully considered but they are not persuasive. Applicant argues based solely on the significant structural differences between the structure of the reference and that of the present invention, the

present invention represented by the embodiments of these rejected claims defines patentable novelty over the reference. As previously indicated, Applicant's structure substantially extends through the matrix, but does not necessarily completely extend through the matrix; therefore, the prior art is capable of performing the same kind of thermal stress resistance in different regions across a face of the article, absent any evidence to the contrary. Applicant further argues because the regions of the references cannot extend completely through the article matrix, with a region extending completely across a face of the article, the single surface area and different kind of structure can not be made obvious. Because Applicant's structure substantially extends through the matrix, but does not necessarily completely extend through the matrix, it would have been obvious that the invention of Parthasarathy would have the relationship of instant claims 3 and 15 because it is known in the art to use specific fibers in an alumina matrix which would be expected to result in the relationship. Additionally, it would have been obvious to one having ordinary skill in the art at the time the invention was made that the hot and cool sides (regions) of the ceramic composite of Parthasarathy could "experience" the temperatures as in instant claims 5 and 17 because the hot and cool sides are the same components of the instant invention. Additionally, Parthasarathy uses the same fibers Nextel (610 and 720) that Applicant uses so discovering these same temperature ranges would be within the skill of the ordinary artisan.

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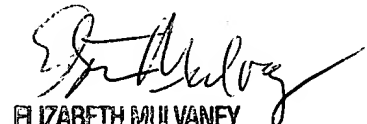
Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lawrence Ferguson whose telephone number is (703) 305-9978. The examiner can normally be reached on Monday through Friday 8:30 AM – 4:30PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on (703) 308-0449. Please allow the examiner twenty-four hours to return your call.

The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-2351.



Lawrence D. Ferguson
Examiner
Art Unit 1774



ELIZABETH MILVANEY
PRIMARY EXAMINER